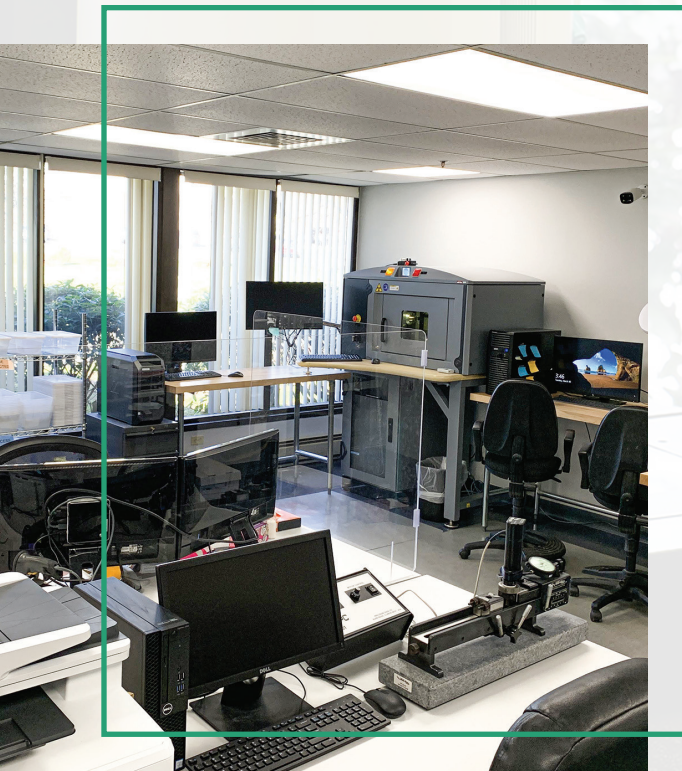


METROLOGY & QUALITY SERVICES

Recognizing the time and resources spent to design components used to serve critical markets, such as those Forum partners with, the Company takes great pride in offering state of the art metrology services, either as part of the component development & manufacturing process or as a standalone service.

Through these services, Forum provides clients with a dedicated metrology team, dimensional imaging tools and software, as well as state of the art Industrial CT scanning capabilities. By combining industry expertise in polymer science, engineering, medical device manufacturing, and metrology, Forum is poised to ensure the highest levels of quality, dimensional stability and measurement precision throughout the validation process.

Whether the metrology need is based upon new product development, transfer tooling, verification of documentation or reverse engineering services, Forum offers a full metrology process review to provide guidance and insight related to critical validation and inspection analysis, optimal manufacturing strategies, accelerated qualification pathways, and risk mitigation options.



KEY INSPECTION SERVICES:

- Complete validation, qualification & PPAP protocols
- IQ / OQ / PQ
- Gage R&R and PFMEA
- ANOVA studies, DOE design, and analysis with Minitab
- First article, in process, and final inspection
- CT scanning capabilities:
 - o Non-destructive dimensional measurement, allowing for FAI without requiring product handling or fixtures
 - o High resolution accuracy allows for measurements with 10 μm accuracy and 4 μm resolution
 - o Provides extensive engineering and optimization capabilities
 - Nominal/actual comparison
 - Porosity analysis
 - Assembly analysis
 - Reverse engineering





FORUM
CONTRACT MANUFACTURING

FORUM'S THREE STEP PROCESS

STEP 1: REVIEW

Forum can begin a component metrology assessment starting with only a component sample and material identification. Working together with our client, we gain a better understanding of the design considerations and goals, material & performance requirements and any limitations or critical performance objectives. This information provides the basis for fixture design, algorithm development and repeatable process establishment to optimize data collection and subsequent analysis.

STEP 2: MEASURE

EXAMPLES OF MEASUREMENT METHODS/TOOLS

Combining data, analytics and best practices, Forum uses a wide range of measurement tools and procedures in order to determine dimensional stability, gain precision, enhance accuracy, and mitigate uncertainty.

- Calipers & Gauges
- Coordinate Measuring Machine (CMM)

INSTRUMENTATION:

- CT Scanner Services
- Dial Indicators
- Optical Comparator
- Micrometers
- Surface Plates
- Vision Measuring Machine (VMM)

STEP 3: VALIDATE

ANALYSIS ASSESSMENT EXAMPLES

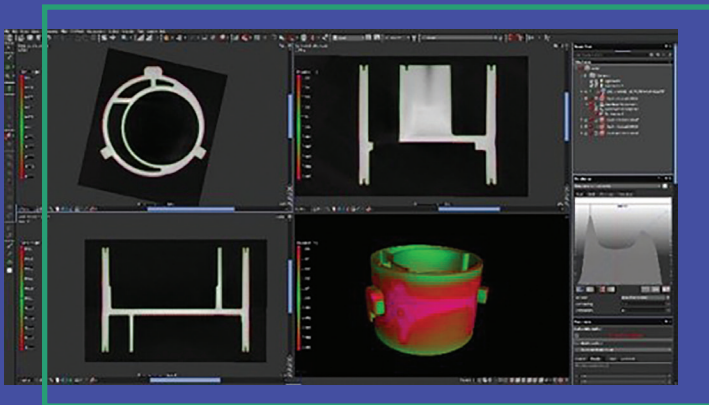
Following the measurement process validation is performed by analyzing factors critical to the design and manufacturing repeatability of the component. Full validation protocol is determined based upon mutual agreement and client requirements.

- Coordinate Measurements
- Inclusions
- Manufacturing Method
- Material Constitution
- Nominal/actual
- Porosity
- Wall Thickness

As part of our validation process, Forum provides clients with detailed information to best support and inform their design and subsequent quality, regulatory and market-based strategies.

EXAMPLES OF REPORT DELIVERABLES:

- Advanced Product Quality Planning (APQP)
- Capability studies
- Certificates of Compliance
- Certificates of Analysis
- Complete Measurement System Analysis (MSA)
- First Article Inspection (FAI)
- Gage Repeatability and Reproducibility (GR&R)
- Initial Sample Inspection Report (ISIR)
- IQ, OQ, PQ Validation Protocol
- Production Part Approval Process (PPAP)



Forum | forumcm.com | 203-754-0777
105 Progress Lane, Waterbury, CT 06705 | sales@forumcm.com

